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SEMINAR OF WIRE COMMUNICATIONS LABORATORY, ACADEMY OF SCIENCES USSR

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A. D. Kharkevich

The seminar of the Laboratory for the Development of Problems of Wire Communications of the Academy of Sciences USSR has continued its work in 1953 under the direction of V. I. Kovalenkov, Corresponding Member, Academy of Sciences USSR.

In the first half of 1953 the seminar examined completed scientific research projects done by associates of the laboratory. The following reports, listed by subject, were heard:

Telephony Over High-Voltage Lines

1. "Telephone Transmission Over a Nonsymmetrical Three-Phase High-Voltage Line," V. I. Kovalenkov, Corresponding Member, Academy of Sciences USSR, (Kovalenkov explained procedures for analytical study of the processes taking place in this type of telephone transmission and advanced formulas for calculating transmission parameters of such lines.)

2. "Resistance of a One-Wire Line at a Finite Soil Conductivity," V. A. Sudakov. (The author examined methods found in the literature for finding the resistance of the ground for a single-wire line, criticized these methods, and proposed a solution based on Maxwell's equations and the introduction of longitudinal capacitance.)

Propagation of Communications Signals in Coaxial Cable

3. "Measurement of Double-Reflected Currents," V. M. Shteyn. (An exposition of problems dealing with the measurement of double-reflected currents occurring in transmission of a television signal and possible means for suppressing fluctuation noises in the measuring process.)

4. "An Instrument for Measuring Group Propagation Time in Wide-Band Communications Channels and Its Adoption," I. T. Turbovich and A. V. Knipper. (A description of the results of utilization of instruments for measuring group propagation time, developed by the Laboratory for the Scientific Development of Problems of Wire Communications of the Academy of Sciences USSR jointly with the Central Scientific Research Institute of Communications (TsNIIS), on the basis of a model built at the laboratory in 1950-1951.)

5. "Measuring Phase-Shift Distortions in Wide-Band Communications Channels," I. T. Turbovich and A. V. Knipper. (This report explained the principles of measuring phase characteristics and the results of testing the model of the instrument mentioned in item 4 above.)

6. "The Influence of Transient Processes on Accuracy in the Measurement of the Transmission Factor by the Frequency-Modulation Method," I. T. Turbovich. (Calculation methods were proposed and formulas derived for calculation of measurement errors caused by transient processes.)

7. "Interaction of Coaxial Circuits," K. Ye. Kul'batskiy. (Formulas were derived for calculating transient damping at the near and far ends of a coaxial cable, taking into account the feedback effect of a circuit subjected to feedback [sic].)

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8. "Electrodynamics of the Coaxial Cable," V. N. Kuznetsov. (Kuznetsov described briefly the procedure he used, and the results he obtained in connection with a number of problems dealing with the propagation of electromagnetic energy through a coaxial cable.)

Facsimile Communications

9. "Methods for the Objective Evaluation of the Quality of Facsimile Transmission," G. V. Dobrovolskiy. (An exposition of the results of work concerned with the selection of means for the objective evaluation of the quality of facsimile transmission.)

10. "One Method for Correcting Facsimile Signals Using Linear and Nonlinear Elements," G. I. Tsemel'. (A report devoted to methods for correcting facsimile signals with respect to the time characteristic and to experimental investigations of correction circuits.)

11. "Some Methods for Increasing the Rate of Facsimile Transmission," G. V. Dobrovolskiy. (An examination of prospects for the use of certain specific characteristics of materials to be transmitted for increasing the rate of facsimile transmission. The author proposed a method for converting facsimile signals into constant-amplitude pulses with standard fronts which should allow the transmission rate of text to be raised by 40 to 50 percent.)

Automatization of Telephone Communications

(This subject was covered at a joint session of the Seminar and the Chair of Telephony of Moscow Electrical Engineering Institute of Communications (MEIS).)

12. "A Variant System for an Automatic Relay Telephone Substation With Group Selectors Removed to the Rayon Automatic Telephone Station," A. D. Kharkevich. (An examination of the procedure for objectively evaluating a skeleton circuit for a relay substation and the selection of the best variant circuit.)

13. "Circuit for Control of Two Selector Stages for Incoming and Outgoing Traffic at a Relay Substation," V. N. Roginskiy. (A report devoted to development of control systems for establishing contact at a relay substation with the best skeleton system.)

Theory of Propagation of Electromagnetic Energy Along Communications Lines

14. "The Effect of Random Fluctuations of Parameters of Long Lines on the Propagation of Harmonic Signals," M. I. Levin.

Theory of the Synthesis of Electric Circuits

15. "Basic Postulates for the Synthesis of Electric Circuits," V. A. Taft.
16. "Comparison of Different Methods for Synthesizing Filters and Corrective Four-Terminal Networks," V. A. Taft.

Surveys

17. "The Interference Effect of Echoes on Observation of a Television Image," V. M. Shteyn.

18. "Theory of Multiple-Layer Coaxial Cables," V. Z. Sudakov.

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